

AMENDMENTS TO THE CLAIMS

Claim 1. (cancelled)

2.(original): A noise canceling method comprising the steps of:  
periodically inserting a zero-point into a signal on a transmission side,  
interpolating a noise component by using the zero-point on a reception side, and  
subtracting the noise component from a received signal.

3.(currently amended): The noise canceling method as claimed in claim 2, wherein one  
or more zero-points are inserted at intervals of an integer number of samples.

4.(currently amended): The noise canceling method as claimed in claim 3, wherein an  
inserted number of the zero-points is determined by deciding a signal quality on the reception  
side to be notified to the transmission side.

5.(currently amended): The noise canceling method as claimed any one of claims [[1]] 2  
to 4 wherein a transmission line of the received signal ~~comprises~~ includes a transparent  
transmission line.

6.(currently amended): The noise canceling method as claimed in claim 5, wherein the  
transparent transmission line ~~comprises~~ includes a Nyquist transmission line.

7.(currently amended): The noise canceling method as claimed in ~~claim 1 or 2~~ wherein the step of interpolating includes steps of performing a frequency shift of the received signal to a desired frequency bandwidth, decimating according to the zero-point, performing an interpolation, and finally performing the frequency shift in a reverse direction so as to adjust to the original signal, thereby generating the noise component of the received signal.

8.(currently amended): The noise canceling method as claimed in claim 7, wherein for the step of interpolating, ~~[[a]]~~ the zero-point is inserted into the decimated signal, and a low-pass filter process for making an interpolation bandwidth a transmission bandwidth is further performed.

9.(currently amended): The noise canceling method as claimed in claim 8, wherein the low-pass filter process ~~comprises~~ includes a cos-squared filter process for making the interpolation bandwidth a Nyquist bandwidth.

10.(currently amended): The noise canceling method as claimed in claim 8, wherein the low-pass filter process ~~comprises~~ includes a cos filter process for making the interpolation bandwidth a Nyquist bandwidth.

11.(currently amended): The noise canceling method as claimed in claim 7, wherein a frequency bandwidth, in which a noise frequency component is large, is detected in the received signal so that the amount of the frequency shift ~~amount~~ is automatically determined for the desired frequency bandwidth.

12.(currently amended): The noise canceling method as claimed in any one of claims [[1 to 11]] 2 to 4 wherein an automatic equalizing process is further performed so as to remove an intersymbol interference at a former or latter stage of a noise cancelation.

Claim 13. (cancelled):

14.(original): A noise canceling apparatus comprising:

means for periodically inserting a zero-point into a signal on a transmission side,

means for interpolating a noise component of a received signal by using the zero-point on a reception side, and

means for subtracting the noise component from the received signal.

15.(currently amended): The noise canceling apparatus as claimed in claim 14, wherein one or more zero-points are inserted at intervals of an integer number of samples.

16.(currently amended): The noise canceling apparatus as claimed in claim 15, wherein an inserted number of the zero-points is determined by deciding a signal quality on the reception side to be notified to the transmission side.

17.(currently amended): The noise canceling apparatus as claimed in any one of claims [[13]] 14 to 16 wherein a transmission line of the received signal ~~comprises~~ includes a

transparent transmission line.

18.(currently amended): The noise canceling apparatus as claimed in claim 17, wherein the transparent transmission line ~~comprises~~ includes a Nyquist transmission line.

19.(currently amended): The noise canceling apparatus as claimed in claim [[13 or]] 14 wherein the means for interpolating include means for performing a frequency shift to the received signal to a desired frequency bandwidth, means for decimating according to the zero-point thereafter, means for further performing an interpolation, and means for performing the frequency shift in a reverse direction so as to adjust to [[the]] an original signal, thereby generating the noise component of the received signal.

20.(currently amended): The noise canceling apparatus as claimed in claim 19, wherein the interpolation means include a circuit for inserting zero-points into the decimated signal, and further include a low-pass filter for making an interpolation bandwidth a transmission bandwidth.

21.(currently amended): The noise canceling apparatus as claimed in claim 20, wherein the low-pass filter ~~comprises~~ includes a cos-squared filter for making the interpolation bandwidth a Nyquist bandwidth.

22.(currently amended): The noise canceling apparatus as claimed in claim 20, wherein the low-pass filter ~~comprises~~ includes a cos filter for making the interpolation bandwidth a

Nyquist bandwidth.

23.(currently amended): The noise canceling apparatus as claimed in claim 19, wherein the means for performing the frequency shift include means for detecting a frequency bandwidth, in which a noise frequency component is large, in the received signal so that the amount of the frequency shift amount is automatically determined for the desired frequency bandwidth.

24.(currently amended): The noise canceling apparatus as claimed in any one of claims [[1 to 23]] 14 to 16 wherein an automatic equalizer is further provided for removing an intersymbol interference at a former or latter stage of a noise cancellation.

25.(new): The noise canceling apparatus as claimed in claim 19 wherein an automatic equalizer is further provided for removing an intersymbol interference at a former or latter stage of a noise cancellation.